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**The City of New Braunfels  
Parks and Recreation  
Asset Management Project**

**Prepared by: The G.A.M.E.S.**

**Abstract:**

Our group the GAMES, was assigned a request for proposal from the City of New Braunfels for a project working along-side the GIS, Parks and Recreation, and Maintenance departments. The project proposed by the city was summarized as an asset management system using ArcGIS Desktop 10.0/10.1 and Accela, an asset management software specialized for government use. The goal was to develop a geodatabase of the parks across New Braunfels and populate it with what they desired to track as an asset inside those parks. This helps the city employees better maintain the various parks across New Braunfels and save money for the local government. With the success of the project, the rest of the departments in the city of New Braunfels can begin to use Accela to track their various assets. The successful integration of Accela into a city government greatly benefits the government by saving money, time, and labor.

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# 1. INTRODUCTION

## 1.1 PROBLEM STATEMENT

The management of any Government Agencies Department's assets is crucial in order for things to be organized and run smoothly. For instance, just think if your cities Municipal Government's Waste Management Department was unable to manage their assets correctly. Can you just imagine how many upset people there would be complaining about overflowing trash bins and the smell? The Parks and Recreation Department's management of assets can also become a real hassle for cities with increasing populations or that have unique features to attract visitors. To counter these management problems companies like Accela have developed software to assist City and Government Agencies. Currently a number of cities across Texas are using Accela management software to help manage their Municipal Governments in some form. For example "...the city of Fort Worth, Texas, has selected Accela Automation® to track and manage key assets. The city's Storm Water Management Division, and the Transportation and Public Works Department will deploy Accela Automation, combined with mobile and GIS capabilities, to easily view and share information including work orders, inspections, costs and more, anywhere in Fort Worth's more than 300-mile radius" (Chen). Another city in Texas, New Braunfels, has joined its City Government with Accela and is in the process of implementing it into their various departments. The City's GIS Analyst and Accela Manager William Flynn has been playing a major role in getting this process going.

## 1.2 PURPOSE

In order to speed up the process a little Mr. Flynn had contacted our group, The GAMES, with a RFP for the purpose of creating an asset based GIS schema for their Parks and Recreation Department. That schema would then be implemented into the City's Accela asset management system, Accela Automation. Upon the completion of this proposal the City of New Braunfels Parks and Recreation Department will be able to better manage and inventory their assets with Accela Automation by implementing such things as preventative maintenance schedules. The Department should also be able to create work orders whenever needed and it might become possible to even begin allowing citizen access to Accela in order to speed up permit issuing and processing for Park assets like picnic areas and pavilions. Other Departments too could utilize this data in the future and build off of it. Understanding all these possibilities, The GAMES worked long and hard hours over the past few months and completed the following objectives in order to supply the City of New Braunfels with what they requested in their proposal:

- Conducted various needs assessments with Mr. Flynn and the City's Parks and Recreation Department Personnel Kelly Eby and Kelsey Heiden.
- Designed 2 GIS Schema's or geodatabases using ArcMap 10.1/10.0 and ArcCatalog around the assets that the Parks and Recreation Department's maintain.

- Conducted field work with Trimble GeoXT GPS units as well as moderate digitizing in order to collect any necessary data.
- With the help of Mr. Flynn, the City of New Braunfels GIS Analyst/Accela Manager, The GAMES synched the GIS schemas/geodatabases with Accela. This linked in all of the Parks and Recreation Department's assets collected into the Accela Management system, Accela Automation.

### 1.3 SCOPE

The scope of this project centered on 35 parks and 83 properties for landscape maintenance in the City of New Braunfels as can be seen in Appendix II Figure 2.1. In addition there were another 5 assets for the park system. These five assets included picnic areas, pavilions, trash cans, spigots and drinking fountains. The collection of sample data for these five assets GIS schema/geodatabase was centered on Landa Park but the GIS schema they used can be implemented for any other park as needed in the future. See Appendix II Figure 2.2 for a detailed map of Landa Park and these five assets.

## 2. LITERATURE REVIEW

Presenting Accela Automation to a city government can make any GIS analyst very stressed. However, once that city government realizes how beneficial the Accela software can be, they will praise that stressed GIS analyst and if this was a perfect world; he would receive a hefty pay increase



for saving his city's government so much money. Unfortunately this is not a perfect world, and city governments are always on tight budgets, looking for any way to save a penny while bettering their citizens.

Accela Automation offers asset management software that manages "building, planning, and licensing activity" (From). The software syncs with a GIS geodatabase and allows city employees to use a user friendly based GIS system through Accela. The city government of Oklahoma City, Oklahoma needed to improve their city government starting with the IT department. Accela's "web based, enterprise technology" was exactly what they needed to accomplish their goals (From). These goals included "integrating multiple departments" of the city so that all departments can access the same information. Another goal was to "improve service to citizens" so that "local businesses and the development community" could have easier access to "permitting and licensing processing" (From). Lastly, the Oklahoma City government wanted to cut down on the paper system and labor hours of inspections by "reducing inspection turnaround time" (From).

Now working and providing positive results, Accela Automation is proven to be successful in managing the assets of the Oklahoma City government. The service to the citizens was greatly improved, unlimited integration became available, inspections became more time successful, and the city government saw great savings. Incorporating Accela Automation can help any city government save money and become "tech savvy" (From).

### 3. DATA

Preliminary data collection was quite easy to obtain compared to the rest of the groups in the class. That is because our client, William Flynn, provided us access to the New Braunfels FTP website. William provided a special folder with all the reference data that we would possibly need for this project. Some of that data included park boundaries, irrigation database, planning database, various tree data, and various park assets that were collected in the past. The first objective of this project was to design a geodatabase of park boundaries and landscape maintenance layers for the selected parks and properties.

The City of New Braunfels website has a GIS section where there is an interactive data extract that is available to the public. We decided to take advantage of this data extract and obtained the parcels for all of the parks and property boundaries. Kelsey Heiden, administrative secretary for the Parks and Recreation Department, and Kelly Eby, Urban Forester, provided The GAMES with two excel tables that defined their desires of parks for park boundaries and landscape maintenance properties. We used the parcels to base our park boundaries and landscape maintenance property boundaries. However, we needed to make edits to a few of the parcels to fix certain boundary issues. After making these edits we had our base data for our first two layers in our first geodatabase. The next objective of this project was to conduct field work and collect the desired assets throughout Landa Park.

### 3.1 FIELD WORK

Landa Park is the pride and joy of all the parks in the Parks and Recreation Department. It is also the park that our client directed us to collect specific assets for our second geodatabase. These five assets included pavilions, picnic areas, trash cans, spigots, and drinking fountains. The picnic areas and pavilions were collected through our Trimble Geo XT 6000. The spigots, trash cans, and water fountains were digitized through 1:400 and 1:1,000 aerial maps. We used the paper maps and walked throughout the park confirming the locations of these assets.

### 3.2 GPS & GIS

As mentioned in the 3.1, the GAMES used a Trimble Geo XT 6000 to conduct our data collection in the field at Landa Park. In order to prepare for this field work, we needed to do a lot of planning and created a data dictionary to record the various assets. The first step of preparation was to check the mission planning, assuring that the PDOP would not be too high. This is done in order to assure that the data collected would be accurate. The next step involved importing a data dictionary to the unit. We utilized Pathfinder Office in order to create it and export it to the GPS unit. After data collection in the field, we used Pathfinder Office again to upload the data from the GPS unit. Then we differentially corrected the data using Pathfinder Office again. Correcting the data is done to make the feature position more accurate. After differential correction, the data is then exported as shapefiles to ArcGIS. Here is where we did some more editing of the data. This editing

included accounting for the offsets, which were used due to tree canopies, and making sure the proper fields were populated with the proper information for each picnic area or pavilion. Lastly, we created a geodatabase of these five assets for Landa Park in ArcCatalog. This was done in order to send the assets to Accela. Now our methodology section will explain all the manipulation we did with this data to make it sync with Accela properly.

#### **4. METHODOLOGY**

There were three major sections for our methodology. The first section consists of the GIS portion of creating the Park Boundaries and the Landscape Maintenance data layers. While the second section consists of the GIS data from five assets that can be found within the areas maintained by the Parks and Recreation Department and consisted of: picnic areas, pavilions, spigots, drinking fountains, and trash cans. Then there is a section that details the syncing of all the aforementioned GIS data with the Accela Management system, Accela Automation.

##### **4.1 PARK BOUNDARIES & LANDSCAPE MAINTANENCE**

To begin with the first section, the group needed to find a way to collect GIS data from a list of parks and landscape maintenance properties that was supplied in spreadsheet format by Kelsey Heiden of the Parks and Recreation Department. In order to do this the group downloaded the City of New Braunfels parcel data from the City's GIS Extraction website and overlaid the City's Address data, from the same website, on top of it. This allowed us to reference the paper based addresses with those in ArcMap and determine where the

properties parcel data was. Giving us a starting point to begin organizing data and seeing what we would need to collect later by digitizing. We then exported the necessary parcel data into their new layers called Park Boundaries and Landscape Maintenance.

Some parks were difficult to find even with the addresses and so we referenced an old/incomplete park boundary shape file that the City of New Braunfels had on their FTP site to help us locate them. Other parks and landscape maintenance properties did not take up the entire parcel dimensions or did not have parcel data and so we had to go in and manually edit these boundaries by digitizing over aerial photos, taken Dec 2011, with references to the FTP site's park boundary shape files, or by best approximation based on acreage data from the spreadsheet. Once we had all of the data merged into their respective layer's we then created the attribute tables based upon the Parks and Recreation Departments spreadsheets received during a needs assessment. It was a little challenging to get the proper and necessary data from the paper spreadsheet due to its format, not being compatible to ArcGIS. Some of the Attribute table's fields were benefited by having domains created for them in order to lessen confusion and to make sure the correct data is input. The attribute table for the Park Boundaries layer had only one domain created in it for the Park Type. While the Landscape Maintenance layer had two domains: Property Type and Property Classification. When the domains were finished the group then populated the attribute fields with the data provided on the spreadsheet from Kelsey Heiden. A unique Asset ID was assigned to each

property at this time for Accela or other software to be able to find the correct data later on. This completed the GIS portion of the first section: Park Boundaries and Landscape Maintenance layer data and we saved them as Parkassetsworkingmap.mxd for the last step, synching with Accela, which will be covered later in 4.3.

## 4.2 FIVE ASSETS

This second section covers the asset GIS schema data collection and processing for the five park assets: picnic areas, pavilions, spigots, drinking fountains and trash cans. For this step in our project we needed to collect spatial data on the five aforementioned assets. Needless to say collecting data from all of the parks was out of the question so Mr. Flynn narrowed our scope down to Landa Park in order to take a sampling of data to test the overall schema. To accomplish this we decided to digitize in the spigots, drinking fountains and trash cans and to use the Trimble GeoXT to take more precise spatial measurements of the picnic areas and pavilions. However, the aerial photographs we had offered little chances of locating such small assets and so we needed a solution. More of a problem was all the tree canopies covering the majority of the park and obscuring details in the aerial photographs and causing issues with our GPS device. The GPS devices issues were resolved by applying an offset to our GPS shots. These offsets were entered into the Trimble GeoXT manually and included the directions of offset, recorded using a compass, and the distances. The distances were measured out with a tape measure to the nearest inch. This

allowed us to edit the offsets later in the GIS and still get accurate readings. In order to locate and collect inventory data for these five assets, the group went out one day with a binder of hardcopy printout aerial photographs at 1:400 and 1:1000 scale of sections of the entire park and manually sighted, plotted and inventoried picnic areas, pavilions, spigots and drinking fountains. The inventory data consisted of picnic table counts, BBQ pit presence and size, and presence and count of trash cans. Then another day the group went out using the same method and actually collected the locations of a sample of 85 trash cans in the park. We limited it to 85 because of the incredible amount of trash cans in the park.

The group's next task was to take the paper data and use that to digitize the information into ArcMap. Each asset got its own respective layer and we carefully digitized in the spigots, drinking fountains and trash cans using the create feature tool. Once we had all the assets digitized into ArcMap based off the paper data we started to look at the Trimble GeoXT data. The GPS data for picnic areas and pavilions was uploaded from the Trimble GeoXT device onto a computer using Pathfinder Office software. The data was then cleaned and edited, removing all unnecessary data like points not in feature or duplicate data. The data was then differentially corrected to increase the precision of the GPS recordings. This cleaned and differentially corrected data was then exported into ArcGIS/ArcMap and separated into their respective layers: picnic areas and pavilions. With these five assets in ArcMap the group was now ready to create the attribute tables for each asset layer. The attribute table's fields were created

using references from the irrigation.gdb and parks.mdb data, retrieved using the FTP site, as well as from needs assessments with Mr. Flynn and the Parks and Recreation Department's employees. Once the five assets attribute tables were completed the group began to create domains for specified fields. These domains were: Trash can type, Trash can lid type, Trash can mount, and BBQ pit size. With the domains created all that was left to do was populating the five assets's attribute tables based on the data The GAMES collected in the field at Landa Park. With that all finished we were able to save the asset layers as landaparkassets.mxd. Thus ending the GIS portion of this section and bringing it up to speed with the first section and ready to be synched with Accela.

#### 4.3 ACCELA

Now that the Park Boundaries, Landscape Maintenance, picnic areas, pavilions, spigots, drinking fountains and trash can layers have been finished in GIS and saved to their respective .mxd file our group was ready to work on the final section with Mr. Flynn, synching the data with Accela. This process is slightly more complex and consisted of multiple processes between the ArcGIS components and Accela. To begin the process, the initial geodatabase we created "parkassets.gdb" containing the data used for the ArcGIS components needed to be copied over to one of the City of New Braunfels dedicated Enterprise servers. The group watched and learned from Mr. Flynn as he demonstrated this using the tool "Create Enterprise Geodatabase". After the parkassets.gdb was copied over it had to be registered as versioned to verify that it is "ok" to use before it can be. The next step was to link the



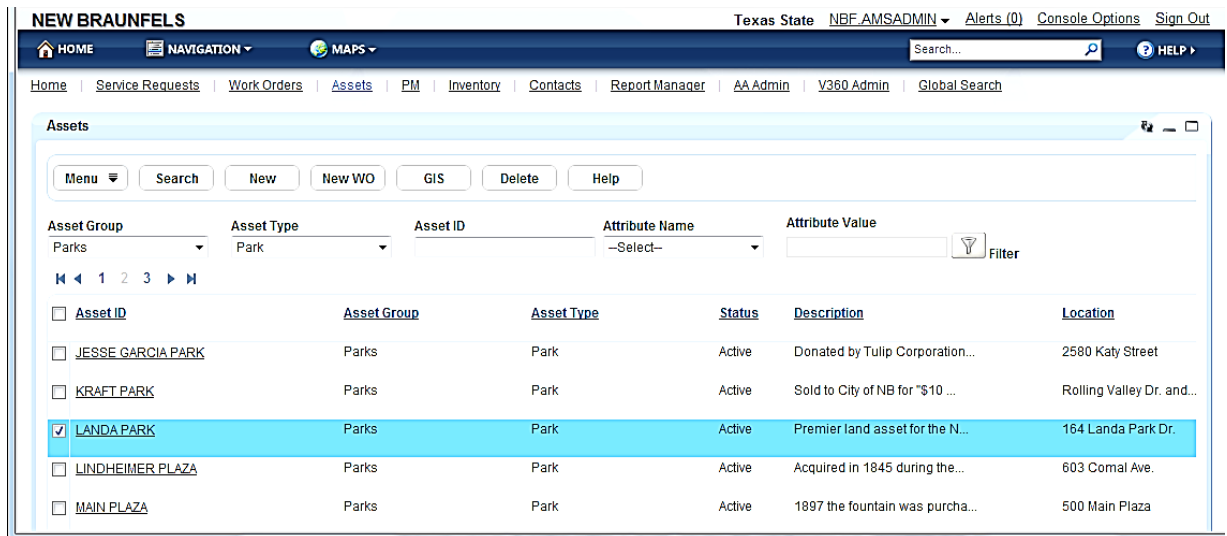
parkassets.gdb data on the Enterprise server to a map service, ArcGIS Server Manager, so that Accela's map service, AccelaSDE, could recognize it. This entailed uploading a copy of the Parkassetworkingmap.mxd to ArcGIS Server Manager. This allowed the ArcGIS Server Manager to associate with and find the data on the City of New Braunfels Enterprise server. Then Mr. Flynn explained to our group that the Accela's map service, AccelaSDE, needs to be able to associate with ArcGIS Server Manager in some way. To do this the group once again associated the Parkassetworkingmap.mxd but this time using the AccelaSDE.mxd file. The purpose of this is to get the Park Boundaries and Landscape Maintenance layer data on the .mxd file that Accela recognizes while maintaining and keeping the ArcGIS data on the Enterprise Server. . Once the Parkassetworkingmap.mxd file had been associated with AccelaSDE.mxd the software had to be restarted, as a way of refreshing the content, to see any changes. With this done it is now possible for Accela Automation to access the "parkassets.gdb" data on the Enterprise Server through AccelaSDE and the ArcGIS Server Manager.

However, access doesn't mean that it is usable yet. In order for the Parks and Recreation Department to be able and utilize this data in Accela a few last steps were involved in Accela Automation. First after logging into the Accela Automation software we had to modify certain configurations under the AA Admin Tools/GIS Service options. Mr. Flynn and the group adjusted the configurations in order to point the layers to the Asset ID's attribute field. This was done in order for Accela Automation to be able to retrieve the correct layer information

from the data on the Enterprise Server. With Accela Automation now being able to retrieve the correct data the Park Boundaries and Landscape Maintenance data was ready to be tested. But before that The GAMES followed similar steps to add our other geodatabase, the parkassets2.gdb, data to the City of New Braunfels Enterprise Server. Except for this we wanted to combine only parkassets2.gdb's data to the parkassets.gdb on the Enterprise Server and not the entire geodatabase. So we used the tool "Feature Class to Server" and added only the data we wanted to the parksassets.gdb. Next it was loading the "parkassets2.gdb's" landaparkassets.mxd file consisting of the picnic areas, pavilions, drinking fountains, spigots, and trash cans to the map services ArcGIS Server Manager and in AccelaSDE. Then the group followed the same steps as mentioned with the Park Boundaries and Landscape Maintenance layers earlier to get these five assets ready to be utilized in Accela Automation. The absolute last thing The GAMES did was to run tests in Accela Support, a support environment for testing, on the finalized copies by assigning preventative maintenance to an asset or assigning fake work orders which will be discussed in detail in section 5 with the results. For a more in depth look at our methodology please refer to Appendix I which show Flow Charts depicting the methodology we used in its entirety.

## 5. RESULTS

The first two screen shots are what the Parks and Recreation Department had populated in their Accela Assets. Creating an asset ID number was our first goal in order to properly sync our geodatabase with Accela.



NEW BRAUNFELS Texas State NBF.AMSADMIN Alerts (0) Console Options Sign Out

HOME NAVIGATION MAPS Search... HELP

Home | Service Requests | Work Orders | Assets | PM | Inventory | Contacts | Report Manager | AA Admin | V360 Admin | Global Search

Assets

Menu Search New New WO GIS Delete Help

Asset Group: Parks Asset Type: Park Asset ID: Attribute Name: --Select-- Attribute Value: Filter

<input type="checkbox"/>	Asset ID	Asset Group	Asset Type	Status	Description	Location
<input type="checkbox"/>	JESSE GARCIA PARK	Parks	Park	Active	Donated by Tulip Corporation...	2580 Katy Street
<input type="checkbox"/>	KRAFT PARK	Parks	Park	Active	Sold to City of NB for "\$10 ...	Rolling Valley Dr. and...
<input checked="" type="checkbox"/>	LANDA PARK	Parks	Park	Active	Premier land asset for the N...	164 Landa Park Dr.
<input type="checkbox"/>	LINDHEIMER PLAZA	Parks	Park	Active	Acquired in 1845 during the...	603 Comal Ave.
<input type="checkbox"/>	MAIN PLAZA	Parks	Park	Active	1897 the fountain was purcha...	500 Main Plaza

This is a screen shot of the specific assets that Landa Park and every other park across the City of New Braunfels collect and track. Our goal here was to cut this down to exactly what the Parks and Recreation Department requests.

<p><b>Acreage</b> <input type="text" value="178"/></p> <p><b># of Tables</b> <input type="text" value="226"/></p> <p><b># of Benches</b> <input type="text" value="460"/></p> <p><b>Covered Shelter</b> <input type="text" value="--Select--"/></p> <p><b>Trash Can(s)</b> <input type="text"/></p> <p><b>BBQ Pit</b> <input type="text" value="23"/></p> <p><b>Spicket(s)</b> <input type="text"/></p> <p><b>Water Fountain</b> <input type="text"/></p>	<p><b>Toilet(s)</b> <input type="text"/></p> <p><b>Port-A-Potties</b> <input type="text"/></p> <p><b>Sink(s)</b> <input type="text"/></p> <p><b>Microwave</b> <input type="text"/></p> <p><b>Oven</b> <input type="text"/></p> <p><b>Refrigerator</b> <input type="text"/></p> <p><b>Outlets</b> <input type="text"/></p> <p><b>Playground(s)</b> <input type="text"/></p> <p><b>Swing Set(s)</b> <input type="text"/></p>	<p><b>Windows</b> <input type="text"/></p> <p><b># of Amenities</b> <input type="text"/></p> <p><b>Type of Amenities</b> <input type="text"/></p> <p><b># of Parking Spaces</b> <input type="text" value="215"/></p> <p><b>Fence (Ft)</b> <input type="text"/></p> <p><b>Fence Type</b> <input type="text" value="--Select--"/></p> <p><b>Windscreen (ft)</b> <input type="text" value="0"/></p>
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Our newly created asset ID has been created and can be seen in the next screen shot.

Assets
Menu Search New New WO GIS Delete Help

Asset Group Parks	Asset Type Parks	Asset ID <input type="text"/>	Attribute Name --Select--	Attribute Value <input type="text"/>	Filter
----------------------	---------------------	----------------------------------	------------------------------	---	--------

Asset ID	Asset Group	Asset Type	Status	Description	Location
<input type="checkbox"/> 1	Parks	Parks		Ernest Eikel Field	250 S Grape St
<input type="checkbox"/> 10	Parks	Parks		Cypress Bend	503 S Peace Ave
<input type="checkbox"/> 11	Parks	Parks		Fischer Park	1820 McQueeney Rd
<input type="checkbox"/> 12	Parks	Parks		Hinman Island	350 Elizabeth Ave
<input type="checkbox"/> 13	Parks	Parks		West Loop Park	1184 Landa St
<input type="checkbox"/> 14	Parks	Parks		Prince Solms Park	100 Liebscher Dr
<input checked="" type="checkbox"/> 15	Parks	Parks		Landa Park	164 Landa Park Dr
		Parks		HEB Soccer Fields	575 N Live Oak Ave

<https://av.supp.accela.com/portlets/ams/asset/dataList.do?module=AMS#>

This screen shot shows the 4 assets we collected throughout Landa Park.

It also shows the requested attributes collected for each asset.

Asset ID: 15

Associate Asset GIS New WO Delete Help

Asset Detail Address (0) Work Order (0) Linked Assets Documents (0) PM Schedules (0) Condition (0) Condition Assessment (0) Contact (0)

Menu Help

<b>Asset Group</b> Parks	<b>Asset Type</b> Pavilion	<b>Class Type</b> Point
<b>Status</b> Active	<b>Status Date</b> 12/02/2012	<b>Asset ID</b> PAVILION 5
<b>Asset Name</b> Pavilion 5	<b>Description</b>	<b>Comments</b>
<b>Record Status</b> Active	<b>Start Value</b> 0.0000	<b>Useful Life (Years)</b> 0.00
<b>Date of Service</b>	<b>Salvage Value</b> 0.0000	<b>Current Value</b> 0.0000
<b>Depreciation Start Date</b>	<b>Depreciation End Date</b>	<b>Depreciation Amount</b> 0.0000
<b>Depreciation Value</b> 0.0000	<b>Dependent Parent</b> <input type="checkbox"/>	<b>Parent Asset ID</b> Parks/Parks/15
<b>Cost LTD</b> 0.0000		
<b>Tables</b> 8	<b>Benches</b> 16	<b>BBQ Pit</b> Large
<b>Trash Cans</b> 1	<b>Covered Shelter</b> Yes	<b>Inflatables Allowed?</b> Yes
<b>Max Seating</b> 60-80	<b>Alias</b> Prince Solms Shelter	

Navigation tree:

- Parks/Parks/15
  - Parks/Spigot
  - Parks/Drinking Fountain
  - Parks/Group Area
  - Parks/Pavilion
    - PAVILION 15
    - PAVILION 16
    - PAVILION 4
    - PAVILION 5**
    - PAVILION 6
    - PAVILION 7A

This is an example of how to assign a work order. This one is for trash removal of plastic bins in asset ID # 15 which turns out to be Landa Park.

**Record Detail** \* (This section is required.)

Work Order Type: AMS/Parks/Grounds/Trash Removal  
Opened Date: 12/07/2012

Detailed Description: Remove trash from all plastic bins.

Assigned to Department: Current Department Parks and Recreation  
Assigned to Staff: Current User --Select--  
Assigned Date: [Calendar Icon]

Filter Name: Single Entry New CAP Form - AMS

**Assets** \* (This section is required.)

Search GIS Get Address Remove

<input type="checkbox"/>	Asset ID	Asset Name	Asset Group	Asset Type	Class Type	Asset Size	Size Unit	Sta
<input checked="" type="checkbox"/>	15	15	Parks	Parks	Point			

Accela would show the city employees a similar map to the one in Figure 2-3, in order to locate all plastic bins throughout the park and complete the work order.

This screen shot shows how to make a preventive maintenance schedule for mulching twice a year at the City Library.

Menu ▾ Submit Reset Cancel Help

PM Schedule | Linked Quick Query | Linked Asset | Skipped Asset | Hold Event | PM Schedule Log | Linked Address

Schedule Name \* LM-Library

Template \* PARKS-LM-MULCH

Schedule Status Active ▾

Start Date \* 12/09/2012

Next Schedule Date 12/09/2013

Trigger By Scheduled Date ▾

Time Interval 2 Year ▾

Usage Interval --Select-- ▾

Generate Single Work Order for All Assets


Generate Work Order if Previous One Opened  Generate Work Orders for Child Assets up to --Select-- level(s)  Include Child Assets in Parent item's Work Order

Link Asset Addresses to Work Orders  Primary Asset Address Only  Include Addresses in Asset's Work Order

Generate Single Work Order for all Addresses

Comments

Here below is the landscape maintenance schedule created for the City Library.

<b>Asset Group</b> Parks	<b>Asset Type</b> Landscape Maintenance	<b>Class Type</b> Polygon
<b>Asset Size</b>	<b>Size Unit</b>	<b>Status</b>
<b>Status Date</b> 10/24/2012	<b>Asset ID</b> 12	<b>Asset Name</b> 12
<b>Description</b> Public Library	<b>Comments</b> 700 E Common Street	<b>Record Status</b> Active
<b>Start Value</b> 0.0000	<b>Useful Life (Years)</b> 0.00	<b>Date of Service</b>
<b>Salvage Value</b> 0.0000	<b>Current Value</b> 0.0000	<b>Depreciation Start Date</b>
<b>Depreciation End Date</b>	<b>Depreciation Amount</b> 0.0000	<b>Depreciation Value</b> 0.0000
<b>Dependent Parent</b> <input type="checkbox"/>	<b>Parent Asset ID</b>	<b>Image</b> 
<b>Cost LTD</b> 0.0000		
<b>Property Classification</b> A	<b>Mow, Line Trim, Edge, Clean-up</b> 36	<b>Shredding</b> 0
<b>Turf Fertilization (Granular)</b> 1	<b>Trim Ground Cover</b> 36	<b>Prune Shrub / Hedges</b> 12
<b>Maintain Flower Beds</b> 12	<b>Pre-Emerge &amp; Fertilization / Herbicide</b> 1	<b>Refresh / Replenish Mulch</b> 2
<b>Property Type</b> City Facility		

## 6. DISCUSSION

After completing our first geodatabase of the park boundaries and landscape maintenance layers, our first goal was to assign a unique asset ID number to each park and property in the geodatabase. This was done in order to assure proper synchronization with Accela. Secondly, we trimmed the attributes collected in Accela to the requests of the Parks and Recreation Department. We conducted our field work based on the desires of the Parks and Recreation Department and only collected picnic areas, pavilions, spigots, trash cans, and water fountains. For the picnic areas and pavilions we recorded the number of benches and tables as well as the size of the BBQ pit. We created a domain for the BBQ pit because there were only three different sizes throughout Landa Park.

Work Orders are another significant component of Accela's arsenal. As mentioned in the results, there is a work order assigned for Landa Park, to remove trash from specifically the plastic trash cans in the park. Once the city employees receive that work order, they would receive a similar map shown below the work order in order to locate each plastic trash can.

One of the most beneficial components of Accela is the preventive maintenance. Preventive maintenance (PM) is where Accela saves labor and money throughout the city government. An example of a preventive maintenance schedule is shown in the results and it shows how assign a landscape maintenance order to mulch the flower beds at the city library twice a year. Below that shows all the different types of landscape maintenance orders with the PM



mulch schedule set. PM automatically generates work orders due to set schedules like the example of the city library.

Synchronizing the GIS with Accela was the major implication that we had to deal with. Although it was the major implication, it only took a few different approaches to actually make it work. When we completed the geodatabase in GIS we had to figure out a way to export the GIS to Accela. ArcGIS server manager served as the GIS map service and AccelaSDE served as the Accela map service. With these two map services, synchronization of the GIS to Accela becomes possible. We successfully imported our geodatabase from ArcGIS into Accela and any edits we made on certain data in the GIS would also be edited in Accela. However, the challenge was to get the flow from GIS to Accela to go backwards. At first we edited a certain feature in Accela GIS, but the same feature in the GIS geodatabase never changed. Once we figured out the problem, our goal of successfully exporting two geodatabases from ArcGIS to Accela has been accomplished.

## **7. CONCLUSION**

The G.A.M.E.S final design of the GIS structure used for the integrated asset management system allows the New Braunfels Parks and Recreation Department the tools to be able to effectively and efficiently maintain numerous assets. Endless opportunities can be conceptualized with the ability to effortlessly access asset data that can be managed both categorically and spatially Parks and Recreation Department asset information that contains associated data such as park zones, pavilions, trash cans, barbecue pits, water spigots and drinking

fountains can be utilized to provide the community with the best facilities possible.

Accela asset management software coupled with a geographic information system provides the New Braunfels Parks and Recreation Department with a powerful tool that can be used in practically every aspect of their day to day operations. The systems integration allows the ability for users to not only utilize the power of comprehensively managing diverse asset data types, but to visualize the asset on an interactive map designed specifically to enhance the utility of the asset management system. With this partnership asset information can be managed spatially either with the assets location or topographic relationships; as well as by textual criteria associated with the asset. Automatically generated preventative maintenance reports can be created remotely by users which only need an internet connection and secure access authorization. Assets can be inputted, located and managed on site; furthering the detail and utility of the system as well as providing invaluable information exactly when needed.

While further progress will be necessary for the asset management system to be fully utilized, the foundation set by The G.A.M.E.S will play a pivotal role to the daily implementation of the system in the New Braunfels Parks and Recreation Department. With their employment of the asset management system continuing into the future, the amount of resources saved is incalculable with the system expanding to fit the coming demands of the ever growing New Braunfels Parks and Recreation Department. With similar G.I.S. schemas to The

G.A.M.E.S's design and with correct implementation, asset management systems can but utilized throughout all levels of government; saving invaluable funds that can be used to educate, heal, save, and better the lives of its citizens as well as people throughout the world.

## 8. REFERENCES

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<[http://www.accela.com/images/resources/success\\_stories/Oklahoma\\_City\\_OK\\_Licensing\\_Solution\\_SS.pdf](http://www.accela.com/images/resources/success_stories/Oklahoma_City_OK_Licensing_Solution_SS.pdf)>." n.d. Accela. 12/2/2012.>.

## 9. METADATA

### Identification\_Information:

#### Description:

Abstract: This data was originally obtained from the City of New Braunfels FTP site.

#### Time\_Period\_of\_Content:

##### Time\_Period\_Information:

##### Range\_of\_Dates/Times:

Beginning\_Date: September 25, 2012

Ending\_Date: December 10, 2012

### Data\_Quality\_Information:

#### Attribute\_Accuracy:

Attribute\_Accuracy\_Report: The accuracy of the data from the FTP site was sufficient enough to accomplish our goals.

Completeness\_Report: All of the data we needed for the project could not be accessed solely through the FTP site. We had to utilize the GIS extract from the New Braunfels website.

### Spatial\_Reference\_Information:

#### Horizontal\_Coordinate\_System\_Definition:

##### Geographic:

##### Geographic\_Coordinate\_Units:

Degree",0.0174532925199433

Foot\_US",0.3048006096012192

##### Planar:

##### Map\_Projection:

##### Lambert\_Conformal\_Conic:

##### Standard\_Parallel:

PARAMETER["Standard\_Parallel\_1",28.38333333333333]

PARAMETER["Standard\_Parallel\_2",30.28333333333333]

Longitude\_of\_Central\_Meridian: PARAMETER["Central\_Meridian",-99.0]

##### Latitude\_of\_Projection\_Origin:

PARAMETER["Latitude\_Of\_Origin",27.83333333333333]

False\_Easting: PARAMETER["False\_Easting",1968500.0]

False\_Northing: PARAMETER["False\_Northing",13123333.33333333]

### Distribution\_Information:

#### Distributor:

##### Contact\_Information:

##### Contact\_Organization\_Primary:

Contact\_Person: William Flynn, City of New Braunfels GIS Analyst and Accela Administrator.

Resource\_Description: FTP website hosted by the City of New Braunfels.

#### Available\_Time\_Period:

Time\_Period\_Information:

Range\_of\_Dates/Times:

Beginning\_Date: September 25, 2012

Ending\_Date: December 10, 2012

Metadata\_Reference\_Information:

Metadata\_Access\_Constraints: Only use for G.A.M.E.S. project.

10. APPENDIX I. Flow Charts

FIGURE 1.1

# Park Boundary and Landscape Maintenance GIS Flow Chart

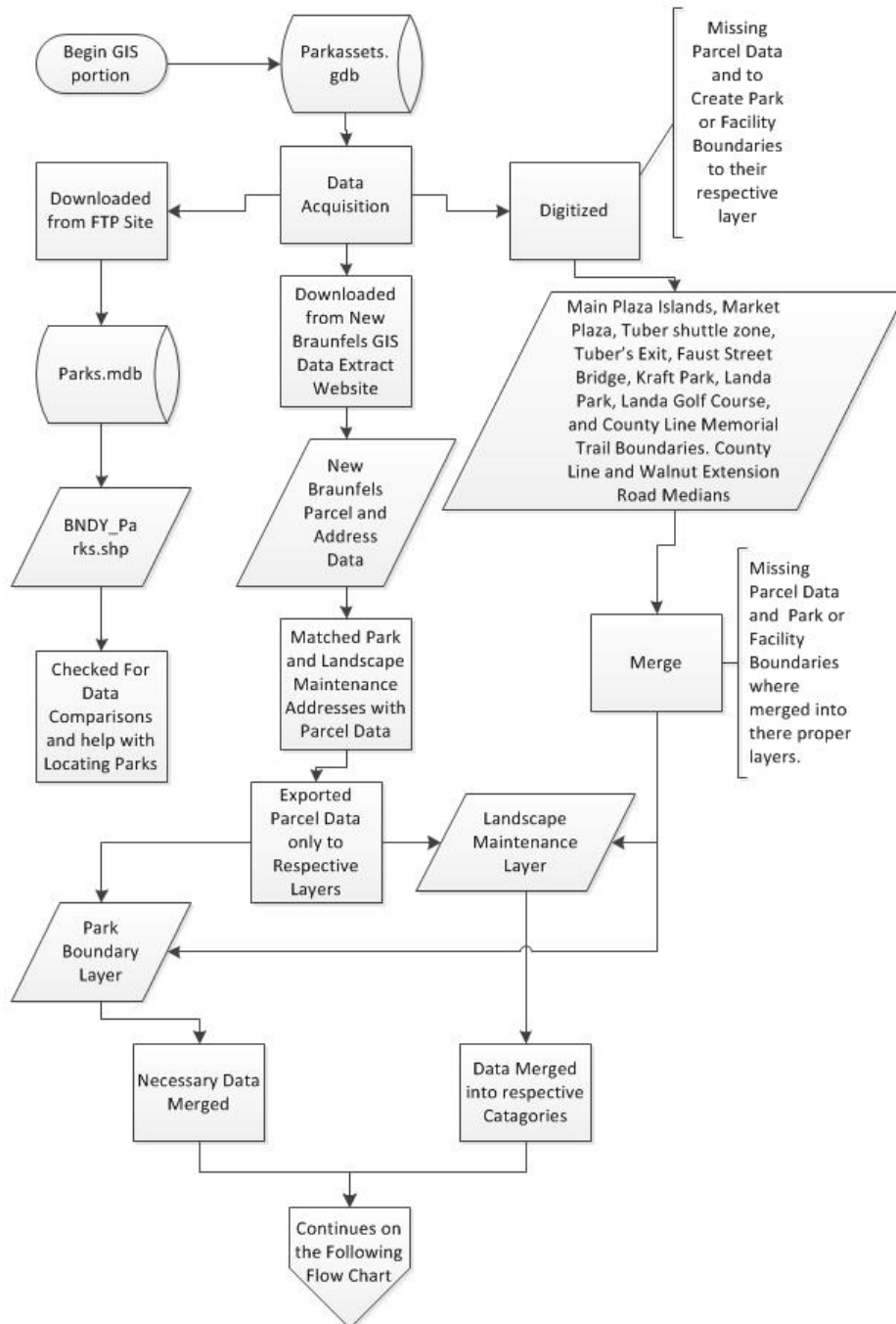


FIGURE 1.2

# Park Boundary and Landscape Maintenance GIS Flow Chart Continued

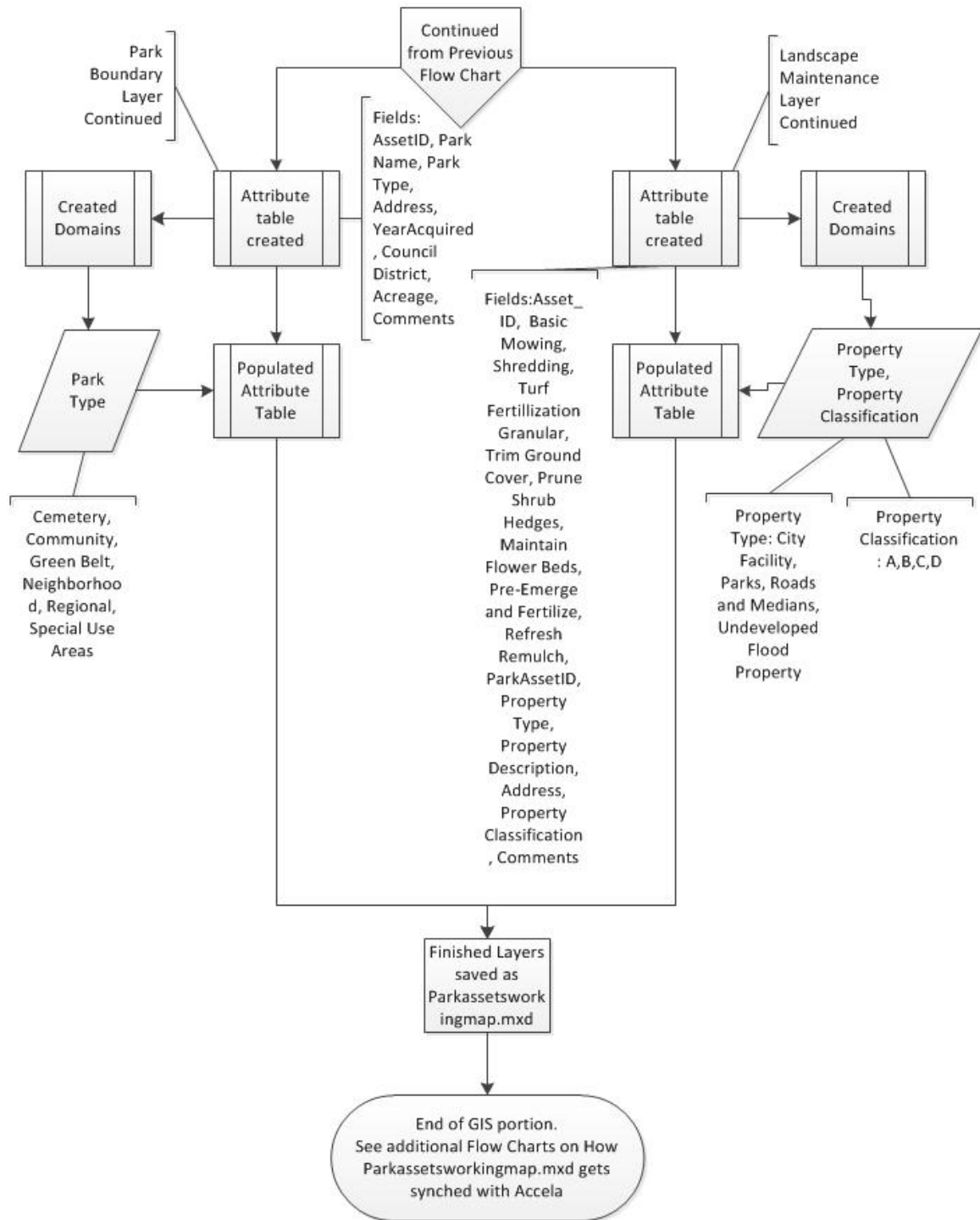




FIGURE 1.3

### Park Boundaries and Landscape Maintenance Accela Flow Chart

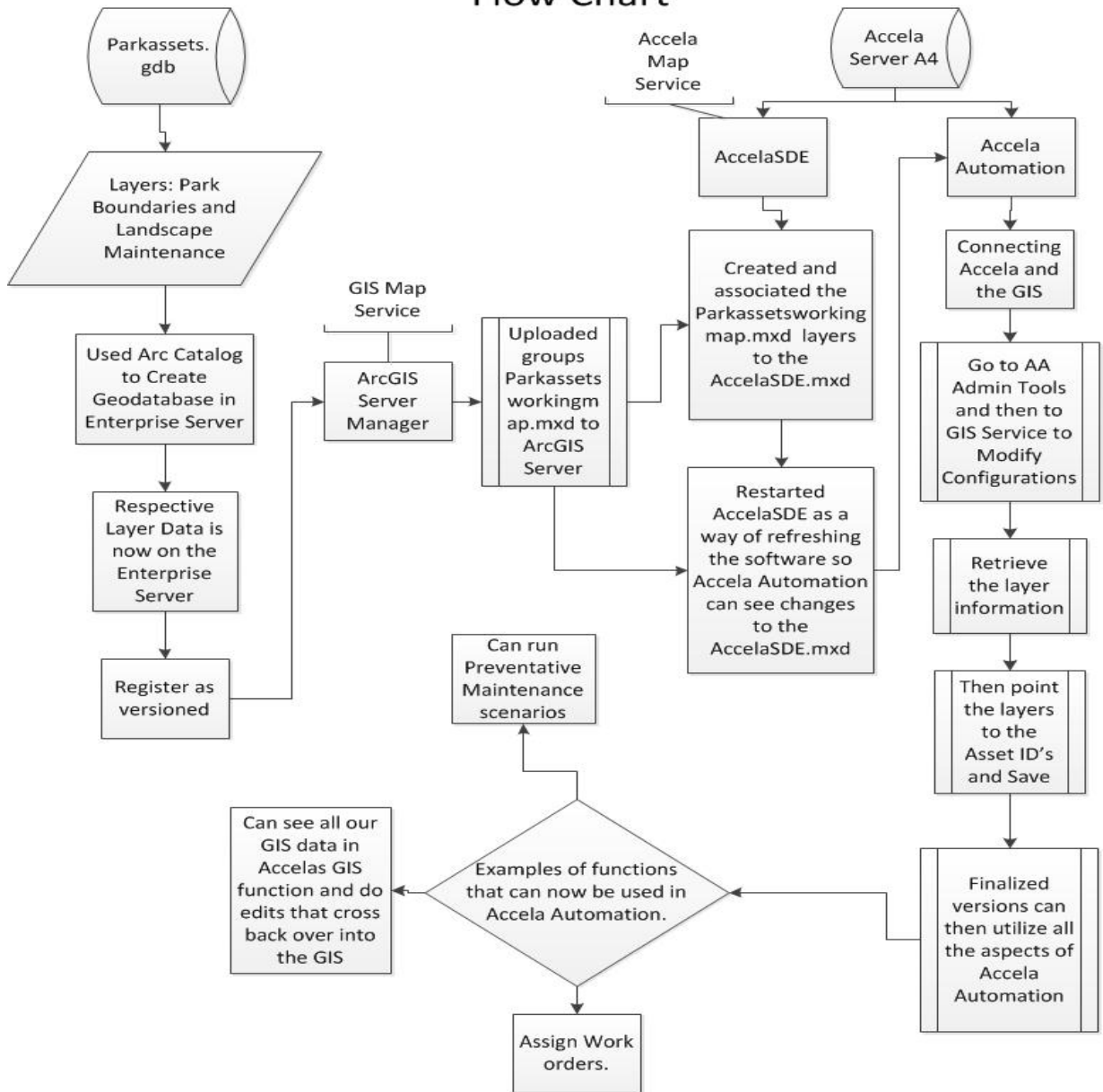


FIGURE 1.4

# Landa Park Assets GIS Flow Chart

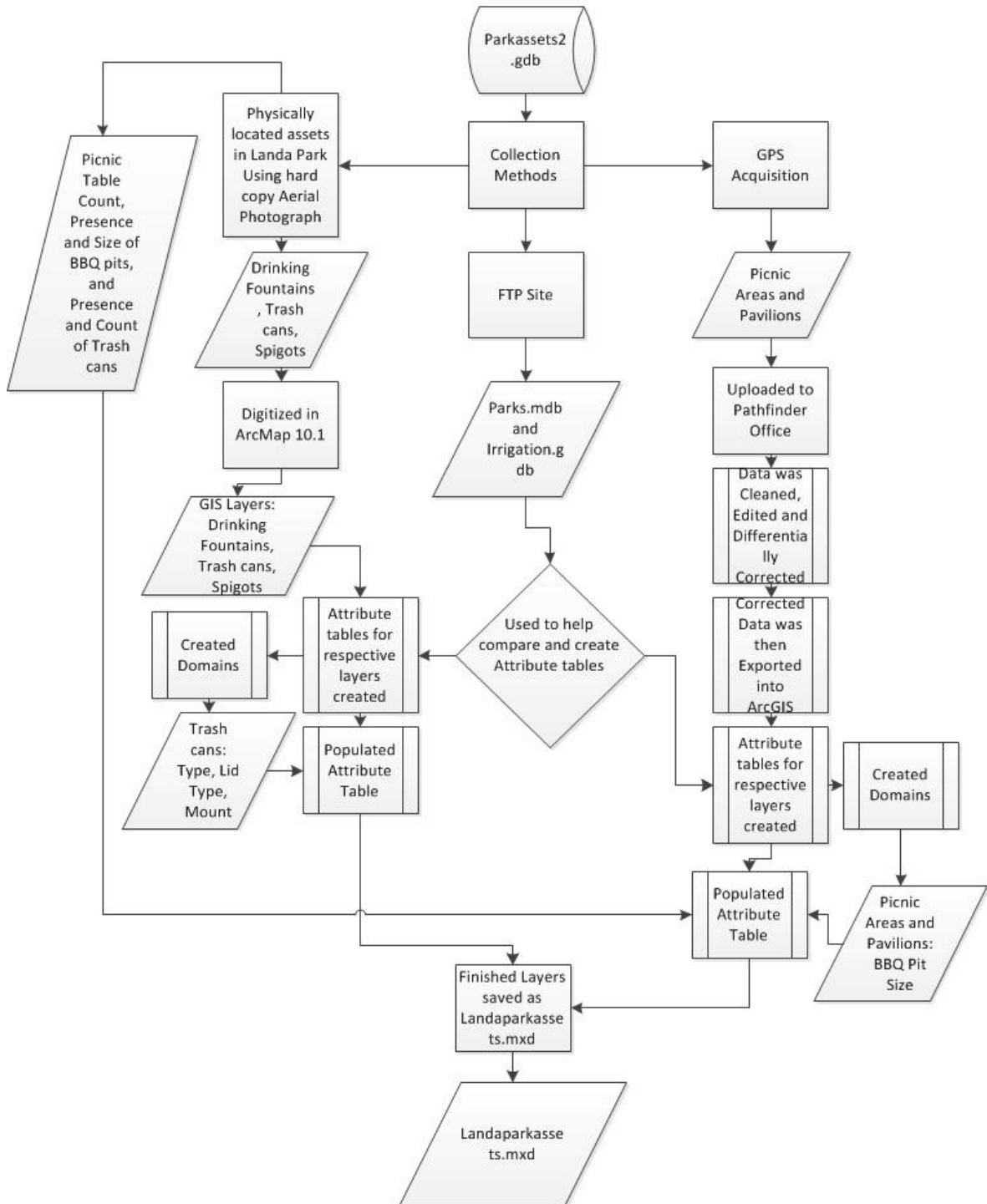
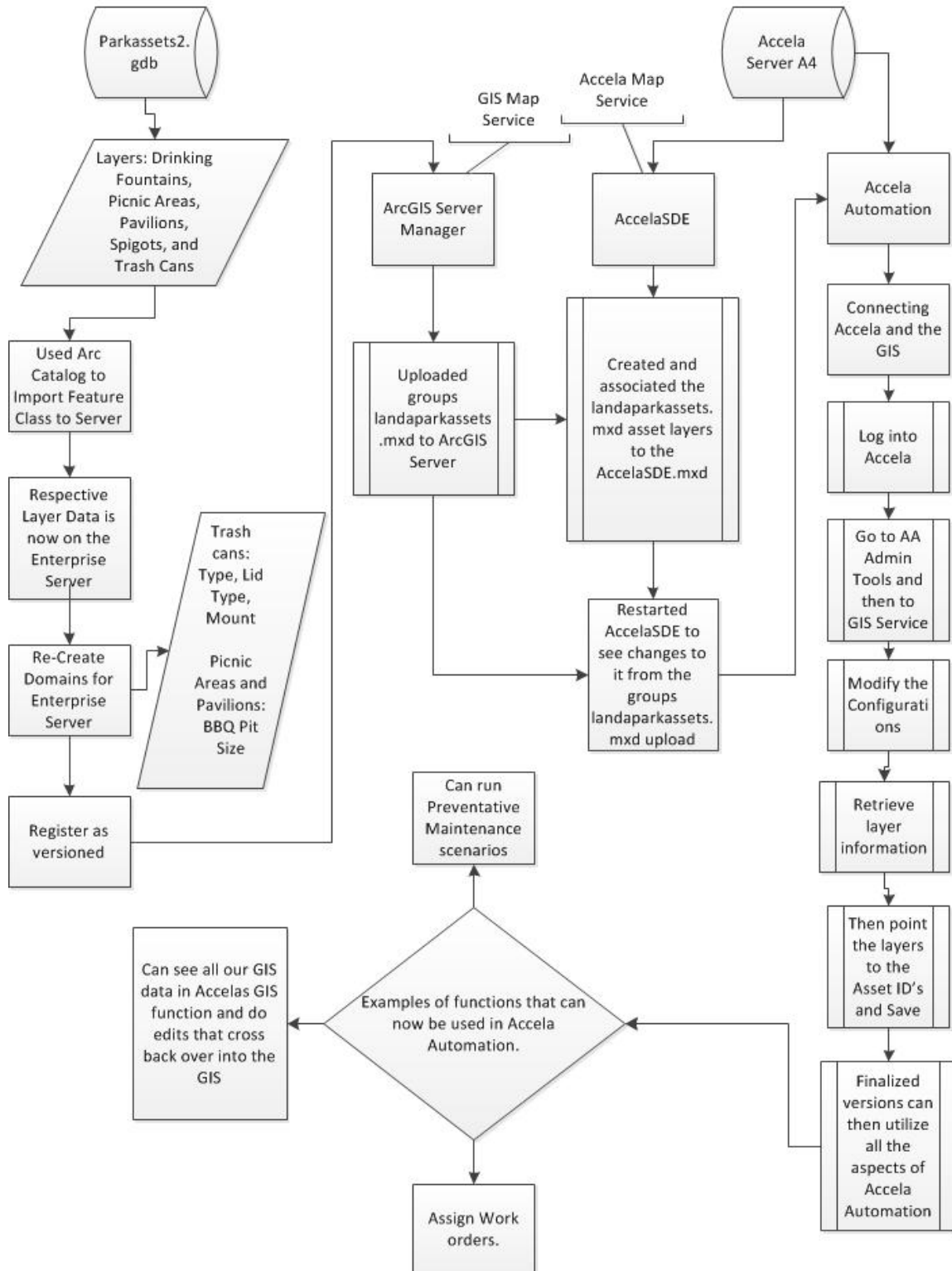


FIGURE 1.5

# Landa Park Assets Accela Flow Chart



11. APPENDIX II. Maps

FIGURE 2.1

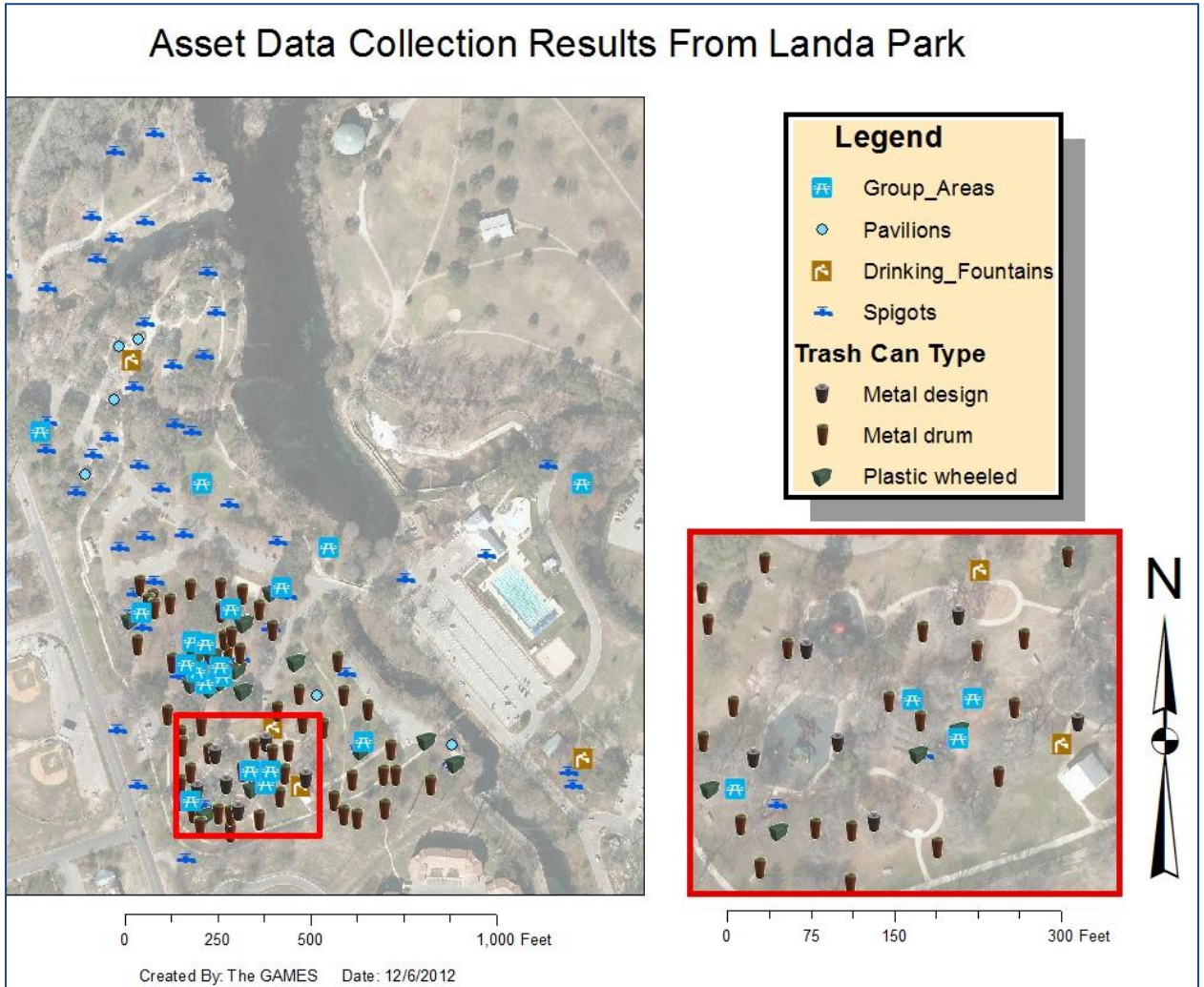
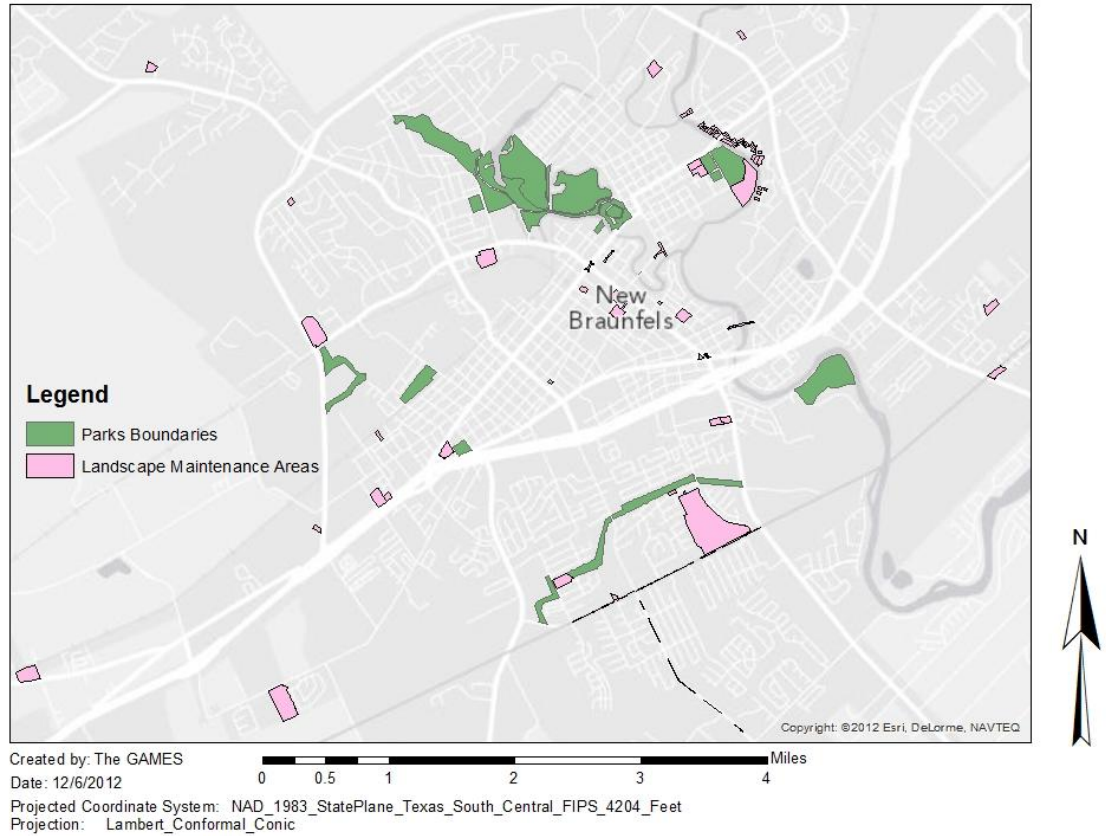


Figure 2.2

New Braunfels, TX Park and Landscape Maintenance Properties





**12. APPENDIX III. Attribute Tables**

**Table 3.1**

**Park Boundaries Attribute Table Example**

	OBJECTID *	Shape *	AssetID	Park Name	Address	Park
Type	Council Districts	Acreage	COMMENTS	Year Acquired		
	Shape_Length	Shape_Area				
8	Polygon	1	Ernest Eikel Field Park	250 S Grape Street		
	Neighborhood	1	4	<Null> 1969	1712.602289	174397.266
30	Polygon	10	Cypress Bend	503 Peace Avenue	Community	
	5	18.1	<Null> 1927	4323.803926	788424.3398	
19	Polygon	11	Fischer Park	1820 Old McQueeney Rd	Regional	
	6	62.53	<Null> 2007	7967.584455	2723847.181	
23	Polygon	12	Hinmann Island	350 Elizabeth Avenue		
	Community	3,5	5.9	<Null> 1958	5196.295427	257017.3562
33	Polygon	13	West Loop Park	1184 Landa Street	Community	
	3	13.2	Need to check the extent of park and make sure it is correct			
	2010	3202.58549	574961.1877			
20	Polygon	14	Prince Solms Parks	100 Liebscher Drive	Community	
	5	15.53	<Null> 1970	7643.000054	676266.7036	
27	Polygon	15	Landa Park	164 Landa Park Drive	Regional	
	3	56.92	<Null> 1936	18938.43195	2479368.512	

11	Polygon	16	HEB Soccer Fields	515 Live Oak	Special Use Areas
	1	14.4	<Null> 1973	4016.306303	627410.7607
16	Polygon	17	Fredricksburg Field	689 Fredricksburg	Special Use
	Areas 3	5.47	<Null> 1954	1966.878997	238256.1654
22	Polygon	18	Landa Golf Course	180 Golf Course Drive	
	Special Use Areas	3,4,5	114.58	<Null> 1936	19351.97281
					4991291.225
4	Polygon	19	Lindheimer Plaza	603 Comal Avenue	Special Use
	Areas 5	0.25	<Null> 1845	454.976417	10710.64151
3	Polygon	2	Neighborhood Park	1032 W Coll	Neighborhood
	6	0.43	<Null> 1969	554.81487	18881.51128
6	Polygon	20	Market Plaza	292 Tolle	Special Use Areas
	5	0.77	<Null> 1845	1132.427455	33732.29239
7	Polygon	21	Main Plaza	500 Main Plaza	Special Use Areas
	5	0.47	<Null> 1845	639.931259	20557.42138
31	Polygon	22	Faust Street Bridge	Faust Street to Porter Street	
	Special Use Areas	5	1.28	<Null> 1887	2117.606235
					55787.46604
12	Polygon	23	Camp Comal	1901 Kuehler Avenue	Special Use
	Areas 6	42.78	<Null> 1975	6207.969426	1863680.835
21	Polygon	24	Union Street Tubers Exit	100 E Lincoln	
	Special Use Areas	5	1.37	Need year Acquired?	0
					561.014504
					13145.60537



24	Polygon	25	Garden Street Tubers Exit	275 E Garden Street				
	Special Use Areas	5	0.04	Need year Acquired?	0			
			237.506311	1661.991776				
2	Polygon	26	Panther Canyon	Landa Park Drive	Greenbelt			
		3	44.85	<Null> 1939	9075.840289	1953467.744		
26	Polygon	27	Alves Lane	233 Alves	Greenbelt	5	3.27	
			<Null> 2009	1800.187653	142359.3745			
29	Polygon	28	Sunbelt Park Wald Road	Greenbelt	1	5.28		
			Check the extent of park... not sure if the parcel is actual size of park.					
			1996	2152.588638	229926.3257			
1	Polygon	29	River Acres Park	501 Fair Lane	Greenbelt			
		4	1.19	<Null> 1974	1108.48681	51929.73409		
5	Polygon	3	Haymarket Plaza	705 Comal Avenue				
	Neighborhood	5	3.47	<Null> 1949	1593.087988	151192.3543		
13	Polygon	30	Crest Lane Greenbelt	Crest Lane	Greenbelt			
		4	4.44	<Null> 2002-2012	3075.58977	193448.0191		
35	Polygon	31	Dry Comal Trails	3565 Loop 337	Greenbelt			
		1	20.21	<Null> 1995	8903.782062	880138.1845		
18	Polygon	32	New Braunfels Cemetery	Business 35 and Grape				
	Ave Cemetery	1	4.86	<Null> 1845	1845.632835	211515.0789		
34	Polygon	33	Comal Cemetery	301 Peace Avenue	Cemetery			
		4,5	25.11	<Null> 1868	7676.840395	1446927.609		

32	Polygon	34	County Line Memorial Trail	FM 1044 to FM 725					
	Greenbelt	6	69.5	<Null>	2011	23304.9171	2348580.616		
15	Polygon	35	Tube Chute	452 E Mill Street			Special Use Areas		
	5	1.91	What year was it acquired?	0			1286.289148		
							83048.94305		
9	Polygon	4	Jesse Garcia Park	2580 Katy Street					
	Neighborhood	1	0.89	<Null>	1984	928.730877	38815.3393		
17	Polygon	5	Hoffman Park	784 North Park Ridge Dr.					
	Neighborhood	6	0.85	<Null>	1997	831.956994	37067.41152		
28	Polygon	6	Solms Park	445 Rusch Lane			Neighborhood		
	1	8.04	<Null>	2003	2431.712197	350185.555			

**TABLE 3.2**

**Landscape Maintenance Attribute Table Example**

OBJECTID *	Shape *	AssetID	Property Type	Property Description					
	Address	Property Classification	Basic Mowing	Shredding	Turf				
	Fertilization Granular	Trim Ground Cover	Prune Shrub Hedges	Maintain					
	Flower Beds	Pre-Emerge and Fertilize	Refresh Remulch	COMMENTS	Acreage				
	Park AssetID	Shape_Length	Shape_Area						
81	Polygon	1	City Facility	City Hall	424 S Castell Ave	A	36		
	0	0	36	12	12	1	2	<Null>	4.14
									1747.930951
									180489.6009

66	Polygon	2	City Facility	Civic Center	375 S Castell Ave	A	36													
		0					1	36	12	12	1	2	<Null>	2.57						1350.735816
																				111737.2291
68	Polygon	3	City Facility	Fire Station # 1	169 S Hill Ave		C													
		24					0	0	4	4	12	1	2	<Null>	1.02					
																				882.810239 44325.70385
69	Polygon	4	City Facility	Fire Station # 2	4120 Loop 337		C													
		24					0	0	4	4	12	1	2	<Null>	1.06					
																				934.593548 46020.85224
67	Polygon	9	City Facility	IT Rental House	451 S Castell Ave		B													
		36					0	0	0	0	0	0	0	<Null>	0.31					
																				530.293396 13666.3102
76	Polygon	10	City Facility	Police Department	1488 S Seguin Avenue															
		B					36	0	1	36	12	12	1	0	<Null>	4.05	<Null>			
																				1971.608511 176380.5028
82	Polygon	11	City Facility	Police Station Rear Parking Lot	1488 S															
		Seguin Avenue					B		0	0	0	0	0	0	0	0	1	0	Rear	
		Parking Lot						2.16	<Null>	1422.47392	94036.15382									
14	Polygon	16	Parks	Cypress Bend Park	503 Peace Avenue		B													
		0					0	0	0	0	0	0	<Null>	18.1	10	4323.803926				
																				788424.3398

7	Polygon	17	Parks Ernest Eikel Field	250 South Grape	C	36	0	0	0	0	0	0	0	<Null>4	1	1712.602344	174397.2853
16	Polygon	18	Parks Faust Street Bridge	Faust/Porter Street	B	12	0	0	0	0	0	0	0	<Null>1.28	22	2117.606235	55787.46604
6	Polygon	19	Parks Haymarket Plaza	705 Comal Avenue	C	36	0	0	0	0	0	0	0	<Null>3.47	3	1593.087988	151192.3543
11	Polygon	20	Parks Hoffman Park	784 Northpark Ridge Drive	C	36	0	0	0	0	0	0	2	<Null>0.85	5	831.956994	37067.41152
2	Polygon	24	Parks Main Plaza	500 Main Plaza	A	52	0	1	6	4	52	1	2	<Null>0.47	21	639.931199	20557.41898
1	Polygon	25	Parks Main Plaza Islands	500 Main Plaza	A	0	0	0	6	4	52	1	2	Same Park Asset ID as Main Plaza?	0.06	449.726136	2776.14291
3	Polygon	26	Parks Market Plaza	292 Tolle	C	24	0	4	4	12	0	0	<Null>0.77	20	1132.427325	33732.2945	
13	Polygon	30	Parks Sunbelt Park	Wald Road	D	12	0	0	0	0	0	0	<Null>5.28	28	2152.588638	229926.3257	

78	Polygon	33	Roads and Medians	County Line Road Medians	FM							
725 to FM 1044	C	18	0	0	0	0	0	0	0	0	<Null>	
0.02	<Null>	12624.34077	61864.23126									
83	Polygon	34	Roads and Medians	Tubers Shuttle Zone	100 E							
Lincoln	B	24	0	0	0	4	0	0	0	<Null>	1.37	
24	1624.50246	46644.6057										
77	Polygon	35	Roads and Medians	Walnut Extension Medians	County Line							
Road to Klein Road B		36	0	0	6	4	36	0	2	<Null>		
0.07	<Null>	8405.393077	39780.53308									
80	Polygon	36	Undeveloped/Flood Properties	West Loop Park	1184							
Landa Street C		0	6	0	0	0	0	0	0	Need to		
check the extent of park and make sure it is correct		13.2	13	3202.58549								
574961.1877												
52	Polygon	37	Undeveloped/Flood Property	1103 Rivercrest Dr	1103							
Rivercrest Dr C		18	0	0	0	0	0	0	0	<Null>	0.67	
725.386477	29125.88692											
50	Polygon	38	Undeveloped/Flood Property	1115 Rivercrest Dr	1115							
Rivercrest Dr C		18	0	0	0	0	0	0	0	<Null>	0.34	
488.47353	14758.76884											
47	Polygon	76	Undeveloped/Flood Property	641 Crest Ln	641 Crest Ln							
C		18	0	0	0	0	0	0	0	<Null>	0.55	
680.53968	23791.57764											

29	Polygon	77	Undeveloped/Flood Property	812 Candlewood Cir							
	812 Candlewood Cir		C	18	0	0	0	0	0	0	0
	0	<Null>0.25		433.830749	10871.79987						
28	Polygon	78	Undeveloped/Flood Property	815 Candlewood Cir							
	815 Candlewood Cir		C	18	0	0	0	0	0	0	0
	0	<Null>0.25		422.662549	10888.20282						
27	Polygon	79	Undeveloped/Flood Property	819 Candlewood Cir							
	819 Candlewood Cir		C	18	0	0	0	0	0	0	0
	0	<Null>0.29		452.208099	12671.16532						
49	Polygon	80	Undeveloped/Flood Property	Alves Lane Park	233						
	Alves Ln		C	0	6	0	0	0	0	0	<Null>3.27
	27	1800.187653		142359.3745							
41	Polygon	81	Undeveloped/Flood Property	Fischer Property	1820						
	McQueeney Road		C	24	0	0	0	0	0	0	<Null>
	3	11		7967.584455	2723847.181						
48	Polygon	82	Undeveloped/Flood Property	Landa Plaza	345	Landa					
	Street C		24	0	0	0	0	0	0	0	<Null>7.28
	2450.64105			356001.5409							
63	Polygon	83	Undeveloped/Flood Property	Morningside Park	3737						
	Morningside Dr		D	0	6	0	0	0	0	0	<Null>
	17.02	8		3667.478746	741354.6103						

18 Polygon 53 Undeveloped/Flood Property 307 Fair Lane 307  
Fair Lane C 18 0 0 0 0 0 0 0 0 <Null>0.72  
760.400541 31495.64695

19 Polygon 54 Undeveloped/Flood Property 311 Fair Lane 311  
Fair Lane C 18 0 0 0 0 0 0 0 0 <Null>0.52  
642.363681 22816.66287

## **Appendix IV. Personal Reports/Contributions**

Nathan Andrews:

For the proposal I wrote the Introduction, Purpose, Scope, Cover Page, and I designed the Logo and Budget. I also made the power point presentation and did a lot of the organizing and editing. For the first stage of our project working on the park boundaries and landscape maintenance layers we received the preliminary data for these properties on paper spreadsheets. We then divided the spreadsheets information up equally among us. Mr. Flynn mentioned using parcel data to represent the spatial locations of the parks/landscape maintenance properties and getting it to us sometime later in the week. However, I found the parcel and address data we needed on their websites data extraction page and verified that it was correct with Mr. Flynn. I then told the rest of my group where to find the data and how to extract the correct information. Then I proceeded to find the parcels for the properties I was assigned and digitized in over 20 road medians, the main plaza islands and others. On the day I was supposed to gather everyone's data together and compile it into a finished product for the next day's meeting with Mr. Flynn I found out that a group member didn't do their portion. So I gathered up everyone else's data and started working on the portion that wasn't done. When I finished with that there was another group member's data that was not compatible to the rest of the data and had incorrect features digitized. So I had to redo most of that group members work as well. After all the data was finished and corrected I populated all the attribute tables based off of the spreadsheets data. Then I brought it to the meeting along with the shapefiles and geodatabase for Mr. Flynn.



The progress report was worked on next and I was assigned to the Introduction, Project Description, Purpose, and Scope again. I created some attribute tables for the report as well. For the next part of the project we collected data for assets located within the Parks and Recreation Departments properties. These assets were picnic areas, pavilions, drinking fountains, spigots and trash cans. For this stage I printed out 20 plus aerial photos at scales of 1:1000 and 1:400 covering most of Landa Park and placed them in a 3-ring binder. This task was assigned to someone else but I assumed he would forget or wouldn't and so I went ahead and did it, good thing too. No one had anything and I had to go back to my house after class and print out another 2 binders worth of photos for my group members. The second time I have run out of ink printing this semester. Once we were in Landa Park with the binders full of photos we started collecting data. This data consisted of locating all of the spigots or drinking fountains in the park then marking the relative location as best we could on the paper aerial photos. We were also collecting the presence and count of trash cans and bbq pits (pit size as well) near picnic areas/pavilions. I helped collect this data until the group had to leave. Then I stayed behind and collected all the rest of the spigot and drinking fountain data myself and finished the count/presence of trash cans and bbq pits for the remaining picnic areas and pavilions. I took this data and digitized all of the spigots and drinking fountains into their respective layers and created attribute tables and domains. Then I got Kevin's finished GPS data on the pavilions and picnic areas and combined them into a single geodatabase with my data. This geodatabase was given to Mr. Flynn at the next meeting and he then asked if it would be possible to collect data on trash cans. As a group we said "sure it was possible" and so that same day after we got back to San

Marcos I went back to New Braunfels and collected data on 85 trash cans using the paper aerial photos and locating the trash cans then marking their spatial location on the map. I also inventoried the type of trash can, mount type and lid type as well as took pictures of each different trash can so that Mr. Flynn could use them if needed to show as a thumbnail of the asset in Accela. Those pictures went with the other 100 plus pictures I took of Landa Park and other parks assets when I did my research on the type of assets the parks may want to keep track of. I took the trash can data I collected and digitized it. Then I created the attribute tables and domains for the trash can type, mount, and lid type. This layer was finished and emailed to Mr. Flynn the same day he asked for it. Included in the data I emailed to Mr. Flynn was an addition of the police shooting range parcel data (we couldn't find it, then I did) to the landscape maintenance layer, a boundary issue on the Landa Park and Landa Golf Course I fixed, and an extra drinking fountain that I found in Landa Park when collecting trash can data.

In the final report I was assigned to the Introduction/Problem Statement, Purpose, Scope, Methodology, Flow Charts, Appendix II. Figure 2.2, and I did some of the editing/organization. I also found the poster design we used and populated over half of it with data. The remainder of the data was done by Kevin and me later. The website design and everything about it was done by me as well. I created one that I couldn't get to work correctly on the schools computers. So I created a second site using a different format and template and got it to work on the schools computer. I plan on adding the last links to the final papers Monday or Tuesday of Final's week.

I think that's enough contribution's to mention for now, aside from all the notes, research, printouts, and general staying on top of things for meetings. In all I had a

wonderful experience working on a great project and learning from Dr. Lu in the classroom and Mr. Flynn in the field. This project has opened my mind up to the unlimited possibilities in my future and I am looking forward to employing the knowledge and skills I have learned wherever I go.